

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A composition having enhanced thermal conductivity, comprising, in combination:

- a. a powder comprising particles selected from the group consisting of metals, metal alloys, metal blends, metal compounds, carbon, carbon derivatives and combinations thereof having an average particle size in the nanometer to micron range;
- b. a coating imparted to the powder particles; and
- c. a heat transfer medium ~~selected from the group consisting of monomers, interpolymers, polymers, and phase change materials~~ comprising an interpolpolymer prepared by polymerizing alpha-olefin monomer with vinylidene aromatic monomer and aliphatic vinylidene monomers with a volume ratio between 10:1 to 1:100 and a weight percent of 99 to 1 percent and is further prepared with polymerizable ethylenically unsaturated monomer and further comprising a phase change medium selected from the group consisting of salt-hydrates, organic eutectics, clathrate-hydrates, paraffins, hydrocarbons, Fischer-Tropsch hard waxes, inorganic eutectic mixtures, acetamide, methyl fumarate, myristic acid, Glauber's salt, paraffin wax, fatty acids, methyl-esters, methyl palmitate, methyl stearate, mixtures of short-chain acids, capric and lauric acid, coconut fatty acids, propane and methane.

2. (Previously amended) The composition of claim 1, wherein the coating is capable of at least one of imparting corrosion resistance and acting as a dispersant.

3. (Previously amended) The composition of claim 2, wherein the coating acts as a dispersant of the powder in the heat transfer medium by at least one of increasing settling time of the powder, passivating the powder, reducing interfacial tension of the powder and increases adhesion to the powder.
4. (Previously amended) A process for transferring heat between a heat source and a heat sink, comprising the step of interposing between the heat source and the heat sink a heat transfer composition comprising a surface-coated powder comprising particles selected from the group consisting of metals, metal alloys, metal blends, metal compounds, carbon, carbon derivatives and combinations thereof having an average particle size of between about 1 nanometer to about 1 micron, wherein the surface coating imparts improved thermal conductivity properties to the powder relative to uncoated powder.
5. (Previously presented) The process of claim 4, further comprising including the step of suspending the coated powder in a heat transfer medium.
6. (Previously amended) The process of claim 4, wherein the surface-coated powder is prepared by one of:
 - a. complexing a coating compound on the surfaces of the powder particles;
 - b. adsorbing a coating compound on surfaces of the powder particles; and
 - c. imparting a metal coating onto surfaces of powder particles and subsequently complexing the metal coating with another coating.
7. (Previously presented) The process of claim 4, wherein the coating compound is in sufficient amount to form at least a molecular monolayer of the coating compound on surfaces of the powder particles.
8. (Previously amended) The composition of claim 1 wherein the powder particles have an average particle size of less than 10 microns.
9. (Previously amended) The composition of claim 8 wherein the powder particles have an average particle size within the range of 10 nm to 2 μ .
10. (Currently amended) A composition having enhanced thermal conductivity, comprising, in combination:

- a. a powder comprising particles selected from the group of metal, metal alloy, organic metal compounds, inorganic metal compounds, carbon and combinations thereof having an average particle size between 1 nanometer and 100 microns;
- b. a coating imparted to the powder particles wherein the coating is selected from the group consisting of azoles, benzotriazole, tolytriazole, halogen resistant azoles, and substituted derivatives thereof; and
- c. a heat transfer medium selected from the group consisting of monomers, interpolymers, polymers, and phase change materials.

11. (Previously presented) The composition of claim 10 wherein the powder is selected from the group of metals consisting of copper, titanium, nickel, beryllium, iron, silver, gold, alloys thereof, blends thereof, and compounds thereof.

12. (Previously presented) The composition of claim 10 wherein the powder is selected from the group of carbons consisting of graphite, carbon nanotubes, diamond, fullerene carbons of the general formula $(C_2)_n$, where n is an integer of at least 30, and blends thereof.

13. Cancelled.

14. Cancelled.

15. Cancelled.

16. Cancelled.

17. Cancelled.

18. Cancelled.

19. Cancelled

20. (Currently amended) The composition of claim ~~19~~ 10 wherein the azole is selected from the group consisting of aromatic azoles, diazoles, triazoles, tetrazoles, benzotriazole, tolyl triazole, 2,5-(aminopentyl) benzimidazole, alkoxybenzotriazole, imidazoles, oleyl imidazoline, thiazoles, mercaptobenzothiazole, 1-phenyl-5-mercaptopentazole, thiodiazoles, halogen-resistant azoles, 5,6-dimethyl-benzotriazole; 5,6-diphenylbenzotriazole; 5-benzoyl-benzotriazole; 5-benzyl-benzotriazole and

5-phenyl-benzotriazole, a combination of alkoxybenzotriazole, mercaptobenzothiazole, tolyltriazole, benzotriazole, a substituted benzotriazole, and/or 1-phenyl-5-mercaptopentazole, a mixture of a pentane-soluble imidazoline, a pentane-soluble amide, a pyridine-based compound, a pentane-soluble dispersant, and a solvent, and combinations thereof.

21. (Currently amended) ~~The composition of claim 10~~ A composition having enhanced thermal conductivity, comprising, in combination:

- a. a powder comprising particles selected from the group of metal, metal alloy, organic metal compounds, inorganic metal compounds, carbon and combinations thereof having an average particle size between 1 nanometer and 100 microns;
- b. a coating imparted to the powder particles, wherein the coating further comprises an inorganic corrosion inhibitor compound; and
- c. a heat transfer medium selected from the group consisting of monomers, interpolymers, polymers, and phase change materials.

22. (Currently amended) ~~The composition of claim 10~~ A composition having enhanced thermal conductivity, comprising, in combination:

- a. a powder comprising particles selected from the group of metal, metal alloy, organic metal compounds, inorganic metal compounds, carbon and combinations thereof having an average particle size between 1 nanometer and 100 microns;
- b. a coating imparted to the powder particles; and
- c. a heat transfer medium selected from the group consisting of monomers, interpolymers, polymers, and phase change materials;

wherein the powder is a carbon powder and the coating further comprises a lignin-based compound, ethylene oxide/propylene oxide (EO/PO) block copolymers, anionic surfactants, ionic surfactants and nonionic surfactants.

23. (Currently amended) ~~The composition of claim 10~~ A composition having enhanced thermal conductivity, comprising, in combination:

a. a powder comprising particles selected from the group of metal, metal alloy, organic metal compounds, inorganic metal compounds, carbon and combinations thereof having an average particle size between 1 nanometer and 100 microns;

b. a coating imparted to the powder particles; and

c. a heat transfer medium selected from the group consisting of monomers, interpolymers, polymers, and phase change materials;

wherein the powder is selected from the group consisting of aluminum and aluminum alloys and the coating further comprises a cerium compound.

24. (Previously amended) ~~The composition of claim 10~~ A composition having enhanced thermal conductivity, comprising, in combination:

a. a powder comprising particles selected from the group of metal, metal alloy, organic metal compounds, inorganic metal compounds, carbon and combinations thereof having an average particle size between 1 nanometer and 100 microns;

b. a coating imparted to the powder particles; and

c. a heat transfer medium selected from the group consisting of monomers, interpolymers, polymers, and phase change materials;

wherein the powder is selected from the group consisting of copper, silver, iron, steel and alloys thereof and the coating is selected from the group consisting of mercapto-substituted thiodiazoles, amino-substituted thiodiazoles, and mercapto-substituted triazole, amino-substituted triazoles, oleyl imidazoline, triethanolamine and monoethanolamine.

25. (Previously presented) The composition of claim 22 wherein the lignin-based compound further comprises at least one of a monovalent salt of lignin, free acid lignin, polyvalent metal salts of lignin, lignin sulfonic acid, alkali metal salts of lignin sulfonic acid, alkaline earth metal salts of lignin sulfonic acid, and ammonium salts of lignin sulfonic acid.

26. (Currently amended) ~~The composition of claim 10~~ A composition having enhanced thermal conductivity, comprising, in combination:

a. a powder comprising particles selected from the group of metal, metal alloy, organic metal compounds, inorganic metal compounds, carbon and combinations thereof having an average particle size between 1 nanometer and 100 microns;

b. a coating imparted to the powder particles; and

c. a heat transfer medium selected from the group consisting of monomers, interpolymers, polymers, and phase change materials;

wherein the powder is a carbon powder and the coating is selected from the group consisting of alkali metal salts, alkali earth metal salts, ammonium salts, and alkyl ether phosphates.